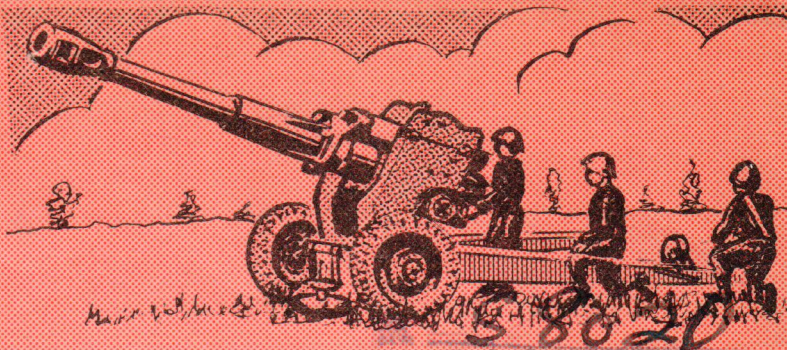


233



ARMY

TECHNICAL INTELLIGENCE

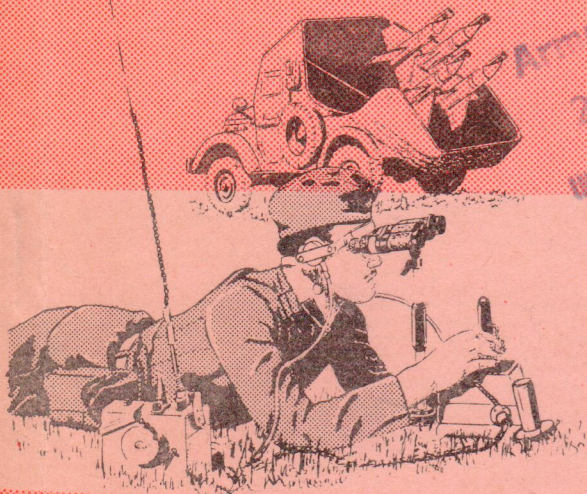
REVIEW

File 292 Folio

RAC on top

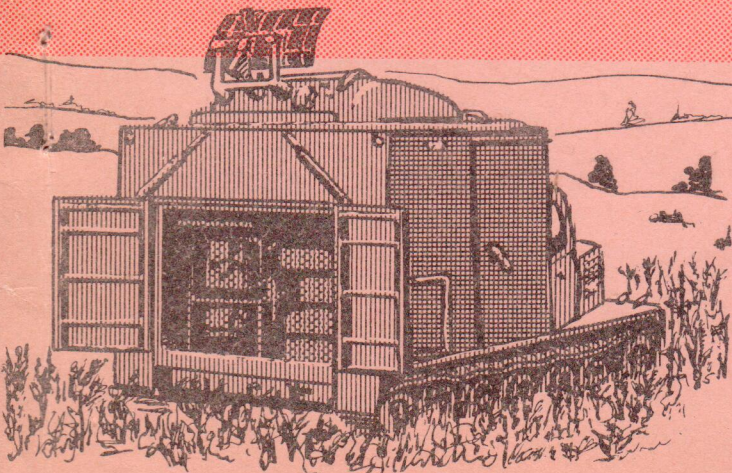
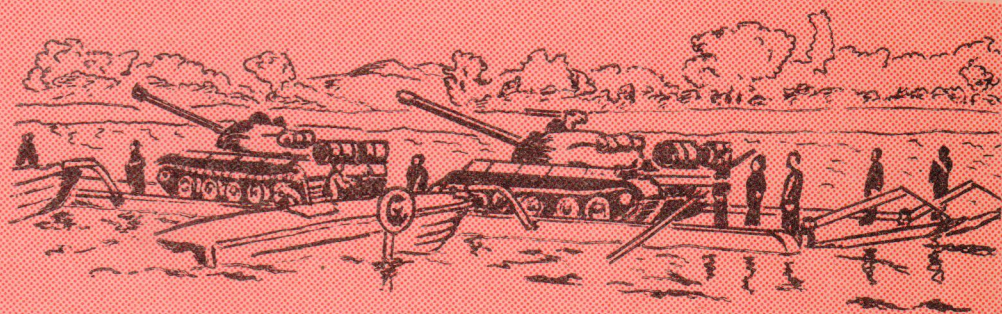


Armour School
23 JUL 72
INFORMATION BUREAU



SUPPLEMENT

January 1972



No
100

SECRET
AUSCANUKUS

ARMY TECHNICAL INTELLIGENCE REVIEW No 100 (SECRET)

JANUARY 1972

INDEX

	Page
FOREWORD	2
1. East German 5.6 mm Rifle KKMP-69	3
2. Arming of Soviet Helicopters	5
3. The SAGGER ATGW Family-Postscript	9
4. Rumanian Heavy Pontoon Bridge PR-60	11
5. Improved HF Antennae on BTR-60PU	13
6. New Soviet AFVs M-1970	15
7. Modifications to T-62 Turret	19
8. T-62 Tank, Commanders Rotating Cupola	20
9. POLE DISH = NRS 1 (?)	21
10. Running Index	25
Total Number of Pages	48

SECRET
AUSCANUKUS

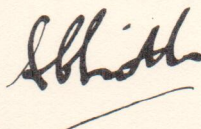
ARMY TECHNICAL INTELLIGENCE REVIEW No 100 (SECRET)

JANUARY 1972

FOREWORD

The simultaneous appearance of two new Soviet AFVs is certainly a red-letter occasion. In this edition we note the reported sighting of what we believe to be the long awaited new Soviet Medium Tank and a new Soviet Light Tank, which could be the replacement for PT-76. As you can imagine, our experts have been very busy with their slide rules and drawing boards but we badly need more photography before we can produce a firmer estimate of the capabilities of the two vehicles.

The rest of the articles cover a wide variety of subjects from small arms to assault bridging. It is certainly interesting to note the evidence which points to the role of POLE DISH as being an intercept and DF post rather than a ground surveillance radar. The possibility of the new Soviet helicopter HIND 'A' being a 'gunship' is also significant.



S C SMITH

Colonel
Tech Int (A)

I. East German 5.6mm Rifle KKMP-69

CONFIDENTIAL

Introduction

The East Germans have introduced a small calibre rifle, the 5.6 mm training rifle which is probably designated the KKMP-69, but may be the KK-MPi. We are not yet certain which nomenclature the East Germans have adopted. We first saw pictures of this weapon in late 1970 (Fig 1)



Fig 1. East German 5.6 mm Rifle KKMP-69

Role

In our opinion this weapon is purely a training rifle though it may be intended in the future to use it in a specialist role for Commando or Airborne troops. However we believe it will not be taken into general service in place of the normal 7.62 mm range of weapons for the following reasons.

SECRET
AUSCANUKUS

East German 5.6 mm Rifle KKMP-69 (cont'd)

Firstly the East Germans have traditionally developed a small calibre version of their standard infantry rifle for training, and all the pictures so far depict the weapon in the hands of very young soldiers or cadets.

Secondly the introduction of a 5.6 mm calibre round into their infantry section would make re-supply more difficult, as at present their assault rifles and LMG's fire the same ammunition.

Technical Characteristics

The rifle has a striking resemblance to the Soviet AKM, but the weapon is lighter and has a shorter barrel. It fires the 5.6 mm long cartridge, is blow back operated and is capable of full or semi automatic fire. The gas cylinder is therefore not present. It is fed from a 15 or 20 round magazine inserted into the shell of a normal MPiKM 7.62 mm magazine. As on the East German AKM, the pistol grip and stock are made of brown plastic material. It is interesting to note that many of the parts for the weapon are being manufactured by prisoners in an East German civilian prison.

2. Arming of Soviet Helicopters. SECRET

General

Since our last article on this subject which appeared in ATIR Supplement No 97 dated July 1970, the Soviets have continued to 'Strap-on' armaments to their helicopters, and the aim of this article is to bring our readers up to date on the subject.

HOUND (Mi-4)

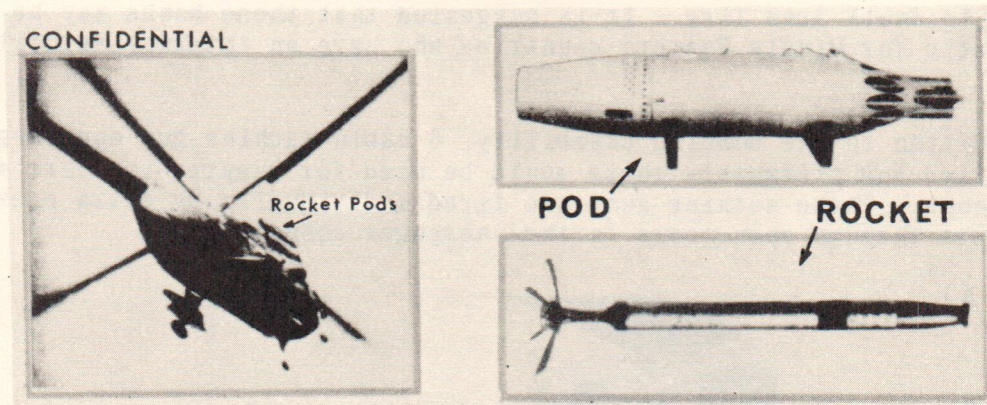


Fig 1. HOUND (Mi-4)

It has been reported that a 23 mm Cannon has been fitted to HOUND in place of the normal 12.7 mm MG. It is thought that this is an experimental venture and that the system is non operational. There have been further sightings of this helicopter carrying its 4 x 16 57 mm Rocket Pods. (Fig 1).

HIP (Mi-8)



Fig 2. HIP (Mi-8)

This is the helicopter whose armament has been added to most in the past year.

SECRET
AUSCANUKUS

Arming of Soviet Helicopters (cont'd)

The variations of armament which HIP can carry now are:-

- a. 4 x 16-57 mm Rocket Pods on side by side mounts two on each side of the aircraft (See Fig 2).
- b. Bombs. Either 4 x 250 Kg bombs or 2 x 500 Kg bombs.
- c. Mixed Armament. 2 Rocket Pods on outboard mountings plus 2 x 250 Kg bombs on inner mountings.

We are not clear why bombs have been introduced onto helicopters as the aircraft would have to be virtually directly over its target, making it very vulnerable to Small Arms fire. It is suggested that these bombs may be a sales characteristic for Middle Eastern countries who have an internal security problem.

In addition to the bombing capability, 6 cabin machine gun mountings have been installed and presumably these would be used for suppressive fire when air landing troops. These machine guns are fired individually by extra crew members or passengers through open ports in the passenger compartment.

HOOK (Mi-6)



Fig 3. HOOK (Mi-6)

We have had no reports of further armament being put on to HOOK in addition to the nose mounted 12.7 mm MG and possible rockets in an unidentified configuration. (See Fig 3).

Arming of Soviet Helicopters (cont'd)

Future Developments

A new helicopter has been seen in the Soviet Union which has been nicknamed HIND 'A'. (See Fig 4). This aircraft is probably a prototype. It is about the same size as HIP but has much sleeker lines than any other Soviet helicopter, with a retractable undercarriage. The design indicates that the helicopter will be very manoeuvrable and may be a gunship, but at this stage we emphasise the word 'may' as it is much too early to be certain. If it is a gunship it marks a change in Soviet philosophy which has always been in the past to 'strap on' armaments. Should the Soviets decide to proceed with this aircraft it will be at least 2-3 years before it can enter service.

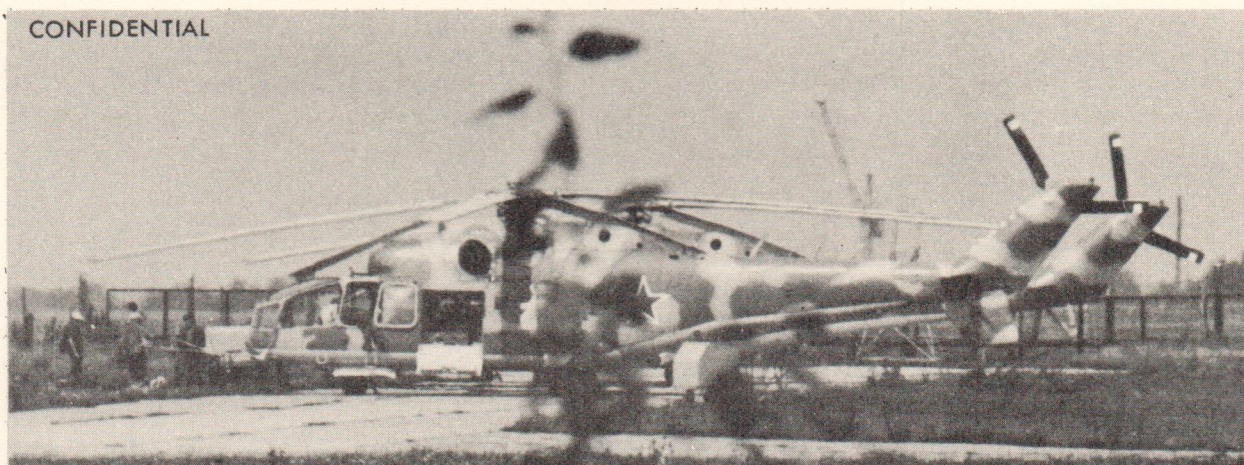


Fig 4. New Soviet Helicopter HIND 'A'

(There are two helicopters in this photograph)

Analysis of Soviet Helicopters (cont'd)

Feature Development

A new helicopter has been seen in the Soviet Union which has been nicknamed "HIND". This aircraft is probably a prototype. It is about the same size as the Mi-6 but has much sleeker lines than any other Soviet helicopter. The design indicates that the helicopter will be very maneuverable and may be a gunship, but at this stage we emphasize the word "gunship" as it is much too early to be certain. It is a gunship in water a change in Soviet philosophy which has always been in the past to "step on" them. Should the Soviets decide to proceed with this aircraft it will be at least 5-6 years before it can enter service.

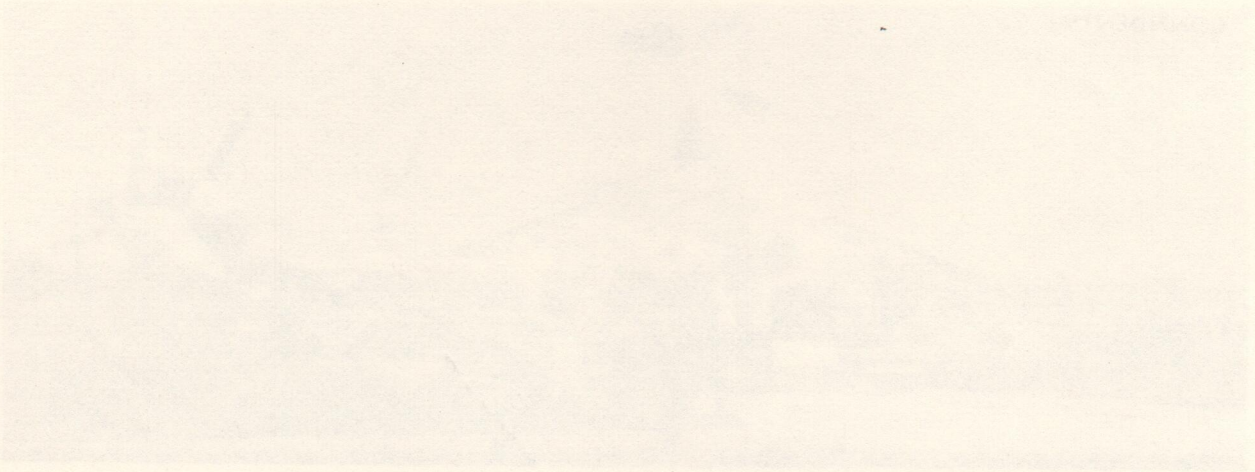


Fig. 4. New Soviet Helicopter HIND-A

(There are two helicopters in this photograph)

3.The SAGGER ATGW Family-Postscript. CONFIDENTIAL

Introduction

ATIR Supplement No 99 (July 1971) contained the current position on the various Anti-Tank Missile Systems employing the Soviet designed SAGGER ATGW. Analysis of information received since the publication of that article now allows for expansion of some of the points made in ATIR Supplement No 99. Paragraph numbers are referenced.

Gathering of the SAGGER Missile (Paragraphs 25-28, 38-39, and 48)

In the previous article the problems created by the absence of a x1 gathering optic on the manportable system sight and on the BRDM remote sight were discussed. It was believed that the Soviets would evolve a drill to overcome these problems.

It is now known that this has taken place and that operators on the manportable system are taught to gather the missile by the naked eye. Training for this quite difficult skill is carried out in the last part of the operator's simulator training. Details of the technique are as follows: (ranges given are subject to confirmation).

Targets under 1000 m. The missile is gathered and guided throughout its flight to the target by the naked eye alone.

Targets over 1000 m. The missile is gathered by the naked eye, and when the missile has been placed on the target line and 2 flare diameters above the target the operator puts his eye to the sight, which has been previously locked on the target. This will probably occur when the missile is some 800 m down range, depending on the engagement conditions.

Experience in the West has shown that this technique requires a high standard of training if the missile is not to be occasionally lost while the operator changes from the head up position and adjusts the focus on his master eye.

A recent report has given the approximate coverage resulting from this technique. The diagram on page 10 shows the expected hit probability for the missile coverage. The ideal conditions to which it relates include,

- Excellent operator
- Light cloud cover
- No extremes of temperature
- No direct sun
- Clement weather
- Clear field of view

The SAGGER Anti-Tank Missile Family - (cont'd)

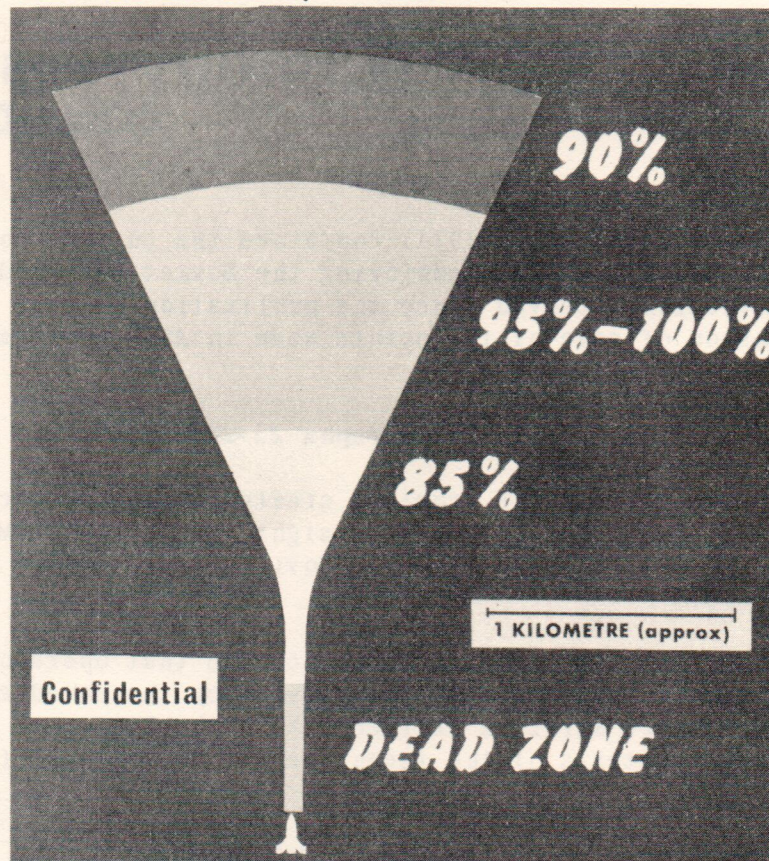


Fig 1. Diagrammatic Hit Probability Manportable SAGGER

It is reasonable to assume that the comments on page 9 will apply equally to the BRDM remote control sight.

SS-11 SAGGER (Paragraph 63)

In the previous article reference was made to a recent defector report of a modified SAGGER missile nicknamed 'SS-11'.

Further investigations have concluded that SS-11 is a local nickname for the current SAGGER ATGW and that the hearsay modifications reported by the defector took place in the early 1960s, before the current in service SAGGER missile underwent general issue.

The reason for the apparent increased length of the East German Army SAGGER drill round is yet to be established.

Deployment of the Manportable SAGGER System (Paragraph 44-49)

The gathering technique covered in the previous paragraphs does not affect the layout described in ATIR Supplement No 99 which remains unaltered.

Identification of Targets (Paragraphs 28, 29 and 45)

A comprehensive system of Reference Points is used in the manportable SAGGER battery for identifying targets. Orders for the engagement of targets follow the normal Western pattern. It is reasonable to assume that these drills will also be employed in the other SAGGER systems and, in particular, with the BRDM system when the remote control unit is used.

4. PR-60 Rumanian Heavy Pontoon Bridge. CONFIDENTIAL

This floating assault bridge, like the Polish Ribbon Bridge PP64 (ATIR 99, Apr 71) uses the ribbon-type principle developed by the Soviets in their PMP. Although this bridge has been around for quite some time it has not been seen outside Rumania.



Fig 1. RUMANIAN Heavy Pontoon Bridge PR-60

It can be built full width (approx 7.6 m roadway) with a claimed capacity of class 60 or half width to class 40. Judging from the deflections shown in Fig 1 it is doubtful whether this equipment would be acceptable in our concept of safe bridge classifications.

The bridge pontoons are carried two high on the Rumanian BUCEGI 114 vehicle (See Fig 2), and launched together into the water directly off the back of the truck. Once in the water the pontoons are connected in the desired configuration. It is claimed that a 300 metre bridge can be constructed in 2 hours. This is less than half the rate of the Soviet PMP.

In summary, the bridge is another example of the general acceptance within the Soviet bloc of the ribbon bridge principle. Compared with the other two, the PR-60 is the poorest and it is unlikely to be seen outside Rumania.

Rumanian Heavy Pontoon Bridge PR-60 (cont'd)



Fig 2. PR-60 pontoons being launched from the
BUCEGI 114 vehicle

5. Improved HF Antennae on BTR-60 PU.

CONFIDENTIAL

In recent months we have noted BTR-60 PU fitted with two specialised types of HF antennae which had previously only been seen on certain box body vehicles. We believe that both these antennae are much more efficient radiators than the rod antenna normally used for mobile working, and that they also produce a significant amount of skywave radiation. The effect of this is that these vehicles should be capable of having more reliable HF communications in the range 0-250 km than is normally obtained with a rod antenna, both at the halt and on the move. It is thought likely that these vehicles are probably used in a command role where good communications are essential.

The first type of antenna is of the 'Bent Dipole' construction. This form of antenna has been seen on ZIL-157 vehicles for some time, and is described on Page 74 of the Review Digest titled "Soviet Bloc and Chinese Communist Signals Equipment" dated December 1970. On the BTR 60-PU version, the construction of the antenna is not so heavy as the type found on the box body, and additional precautions have had to be taken to insulate the feed points at the centre of the antenna to prevent the vehicle commander from receiving an unpleasant burn. Two views of this antenna are shown at Figs 1 and 2. Note the Bent Dipole antenna on a ZIL 157 also shown in Fig 2.



Fig 1. BENT DIPOLE on
BTR-60PU

(Raised in working position)

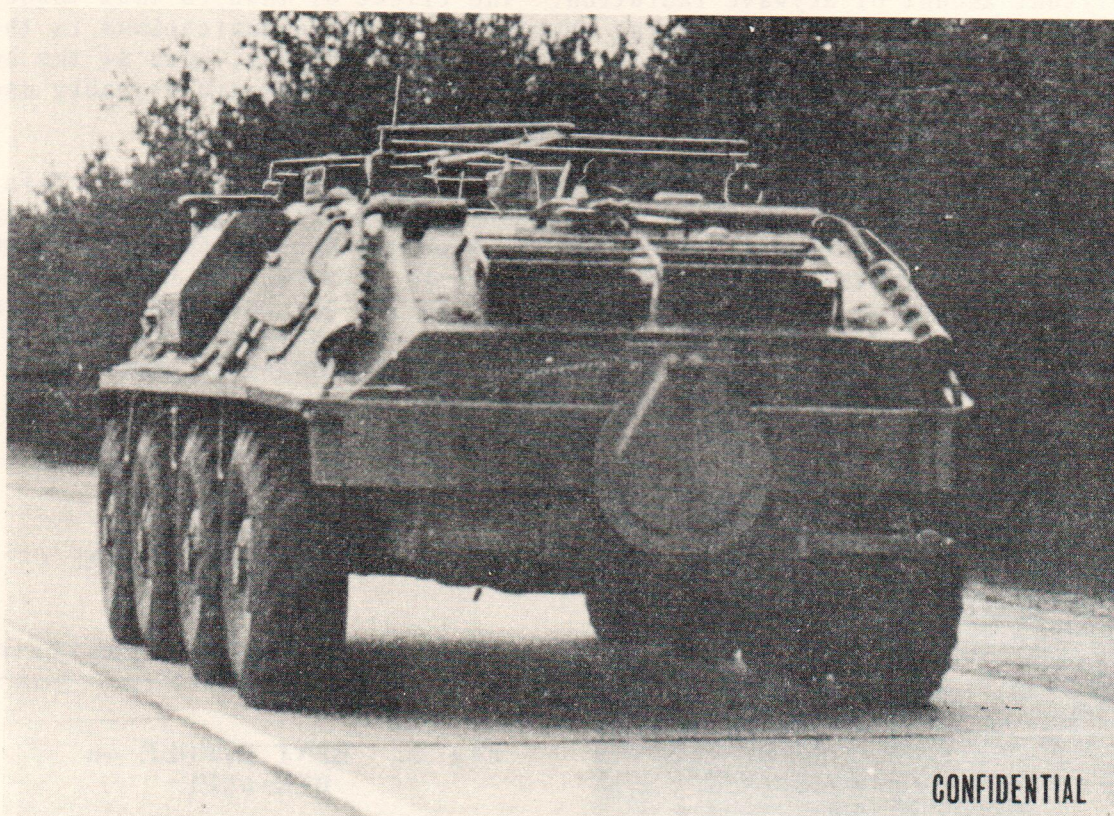
Fig 2. BENT DIPOLE on
BTR-60PU

(In lowered position)



Improved HF Antennae on BTR-60PU (cont'd)

The second type of antenna known as a 'Clothes Horse' type was also originally seen on various box body vehicles shown on Page 72 and 73 of the Signals Digest. It too is now appearing on BTR-60 PU as shown in Fig 3, and again it is held to be a much more efficient antenna compared with a rod.



**Fig 3. CLOTHES HORSE Antenna on BTR-60PU
(Folded flat)**

Although both these versions of BTR-60 PU are almost certainly equipped with VHF radio as well. Note should be taken of the importance which the Soviets still attach to HF communications which cause them to develop two elaborate antennae for fitting to an armoured vehicle.

6. New Soviet AFVs. SECRET AUSCANUKUS

The sudden appearance of 2 new Soviet tanks is something of an event. We were also fortunate that they appeared in time for this edition of the Secret ATIR.

Medium Tank M-1970

A successor for the Soviet MBT T62 has been predicted for some time, and this new Soviet Medium Tank could well be that vehicle. It will however be some time before its true nomenclature and role is known. We have so far only 2 photographs of this tank, and they are reproduced in this article.

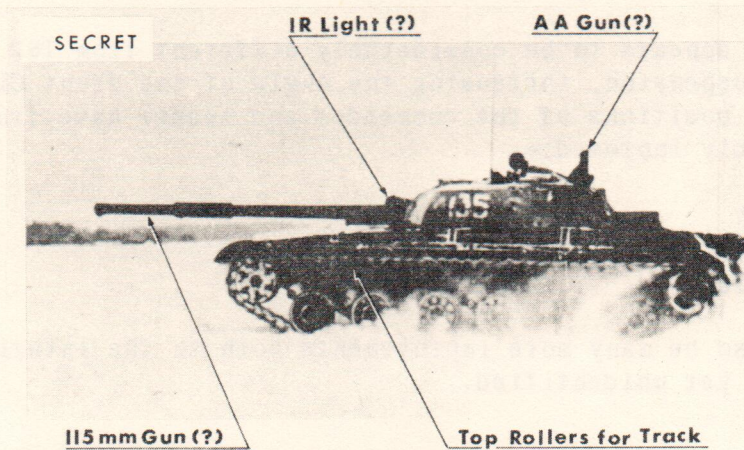


Fig 1. Medium Tank M-1970

Initial estimated characteristics of this vehicle are:-

1. Weight 39-40 tons
2. Gun 115 mm
3. Crew 4
4. Suspension. This is a new type of suspension with much smaller road wheels. The reason for this change could be:
 - (a) To improve cross country mobility.
 - (b) To reduce the incidence of track throwing and to improve road wheel life.
5. Front Glacis plate now at an angle of about 70° .
6. Turret with different shape and placed further back on Hull than T62.

SECRET
AUSCANUKUS

New Soviet AFVs (cont'd)

7. Commander's IR light now on right side of Turret indicating probable change in Commander's position from left to right and Gun loader from right to left.
8. Gunner's IR searchlight now level with and on left side of Gun.
9. Thickened crew hatches possibly indicating the presence of radiation lining.
10. Dimensions:
 - (a) Overall Length 24.7 feet (7.5 m) (T62 22.3 feet (6.8 m)
 - (b) Height 8.2 feet (2.5 m) (T62 7.6 feet (2.3 m)
 - (c) Gun Length 14.5 feet (4.4 m) (T62 14.4 feet (4.3 m)
11. There are no indications of any change in crew size or of automatic loading or a laser range finder.

The new tank appears to be considerably different from T62. The Soviets by changing the suspension, increasing the angle of the front Glacis plate and changing over the positions of the commander and loader have from outward appearances probably improved:-

1. Mobility
2. Fire Power
3. Protection

There may also be many more improvements both to the interior and exterior of the vehicle as yet unidentified.

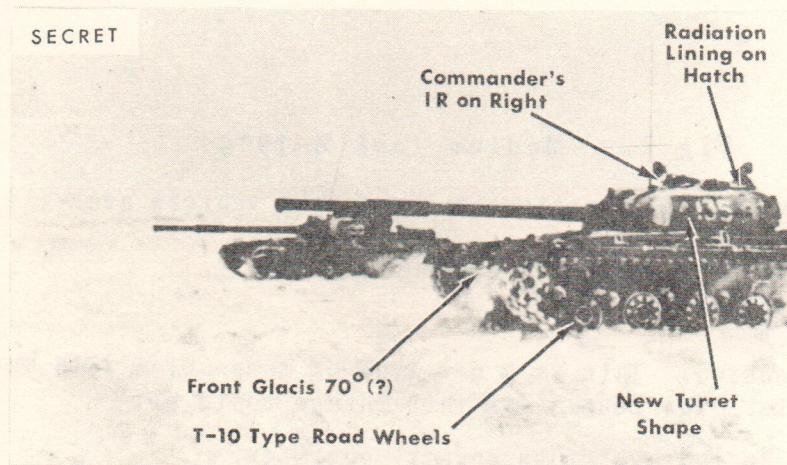


Fig 2. Medium Tank M-1970

Light Tank M-1970

A replacement for the PT76 amphibious tank has long been expected. In this new amphibious vehicle we believe that we have this replacement. As it is also associated with airborne forces and may be air droppable the Soviets may also have in this vehicle a replacement for the ASU 85 airborne assault gun and perhaps the ASU 57 airborne assault gun as well.

3
New Soviet AFVs (cont'd)

Estimated characteristics are:-

1. Gun Turret same as BMP (76 mm Smooth Bore + 7.62 mm CO-AX)
2. Sagger ATGW mounted on Gun
3. Amphibious propulsion by water jet.
4. Engine mounted in rear of vehicle.
5. Dimensions:
 - (a) Length 18.3 feet (5.5 m) (BMP 21.5 feet (6.5)
 - (b) Height 6.42 feet (1.96 m) (BMP 6.3 feet (1.92 m)
6. Weight between 9 and 11 tons.
7. Crew 3/4

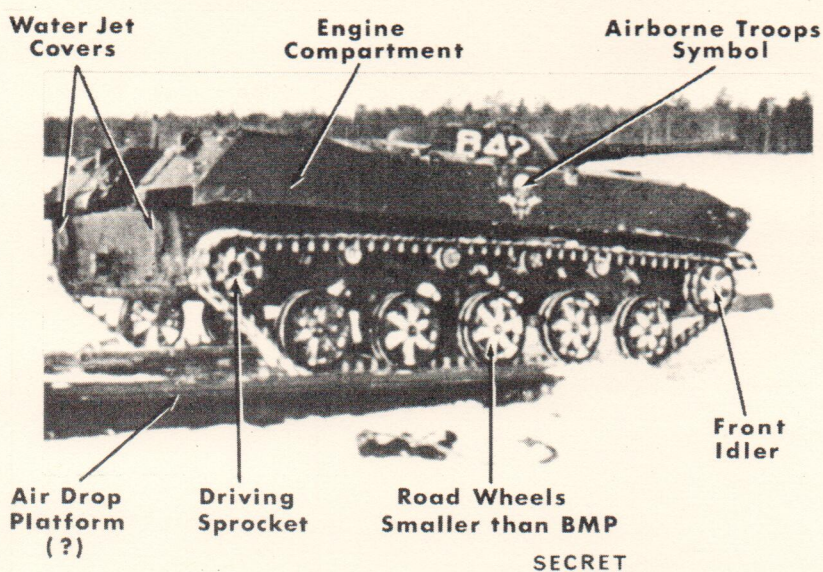
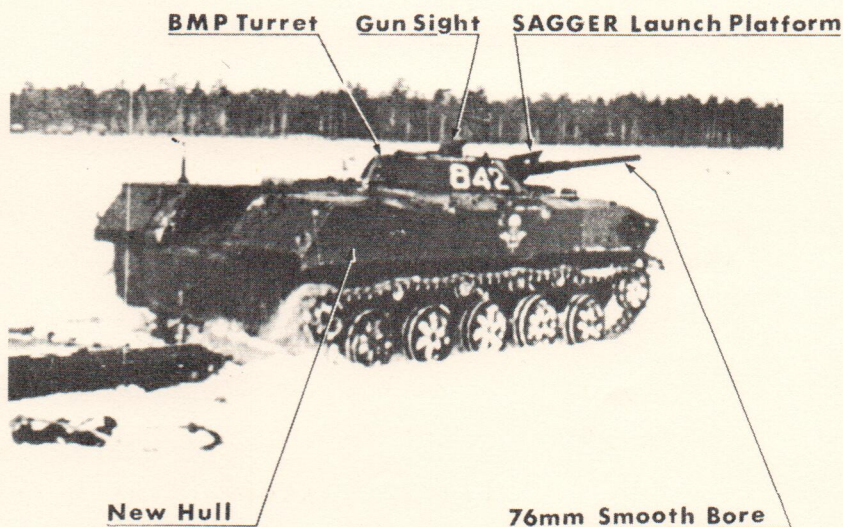


Fig 3.
Light Tank M-1970

SECRET

Fig 4.
Light Tank M-1970



SECRET

This vehicle probably comes from the same stable as BMP and could well use many of its components, although from the outward appearance only the Turret is similar.

7. Modifications to T-62 Turret.

SECRET AUSCANUKUS

In the January 1971 ATIR Supplement No 98 we published a picture showing T62 mounting a 12.7 mm HMG in the AA role.

More recent photography shows that this mounting has meant considerable modifications to the turret itself, in fact a complete new casting. In Fig 1 the differences in the two turrets can clearly be seen.

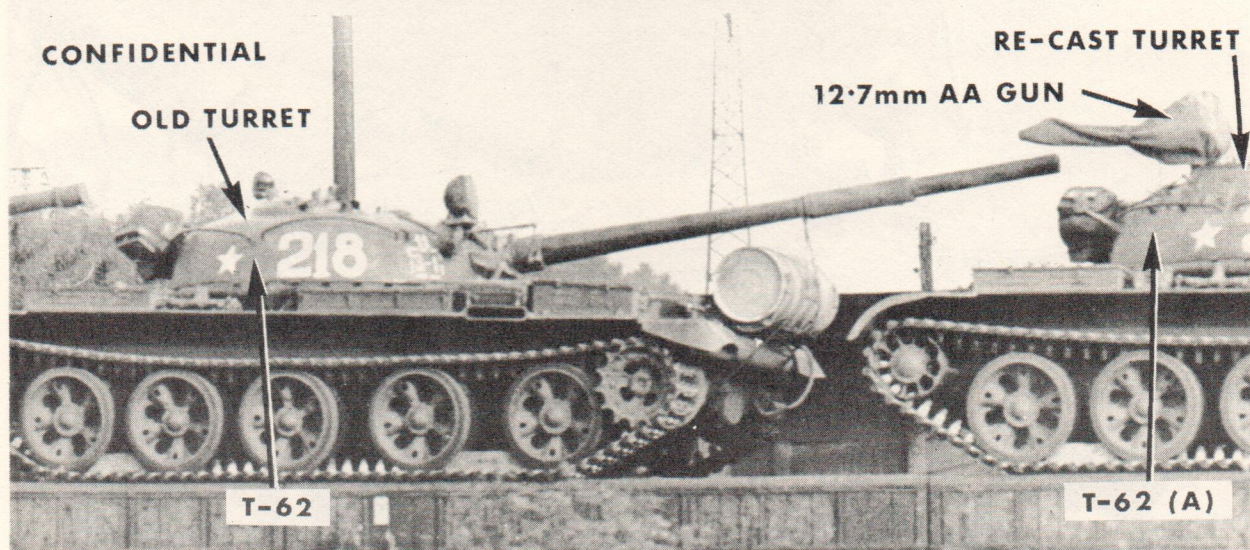


Fig 1. T-62 Turret Modification

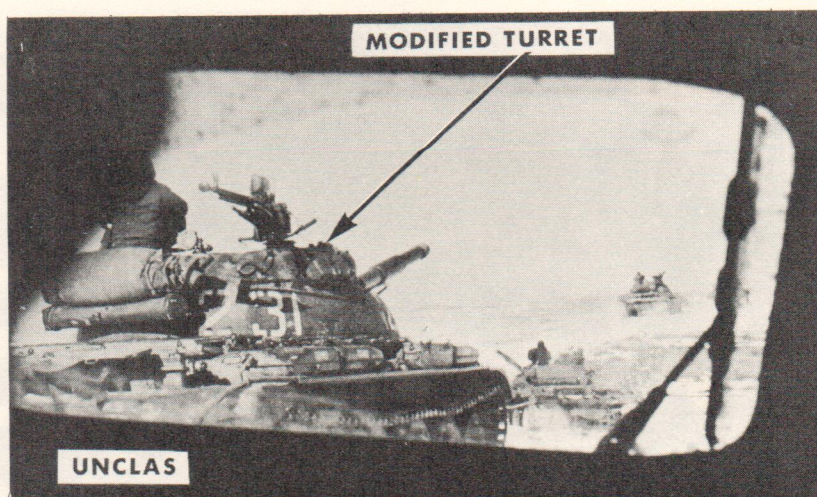


Fig 2. T-62(A) with 12.7 mm AA MG

As this is such a major modification it is thought that there are also further changes to the turret interior.

Until the true nomenclature is known, it was agreed at the 1971 Tech Int Army Conference that T62 with the modified turret should be referred to as the T62(A). (See Fig 2).

8. T-62 Commander's Rotating Cupola. SECRET AUSCANUKUS

While it has always been thought that the Commanders Cupola on T62 was capable of rotating independently, it was not until recently that this was proved to be true. In Figs 1 and 2 below, the Commanders Cupola can be seen facing both forward and rearwards.



Fig 1. T-62 Cupola Facing Forward

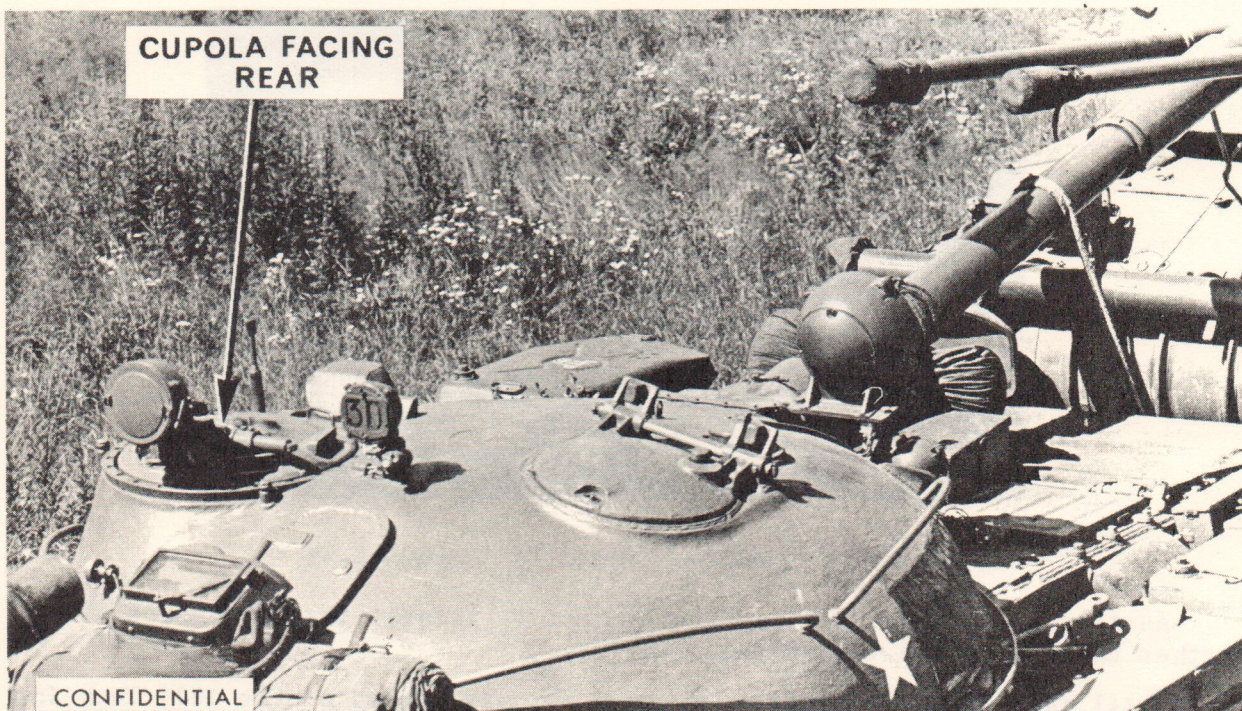


Fig 2. T-62 Cupola Facing Rearward

9. POLE DISH = NRS-1 ? SECRET AUSCANUKUS



Fig 1. POLE DISH Mounted on GAZ-69

Background

POLE DISH has been seen in East Germany since 1964. It has appeared to have artillery and ECM associations. The suggestion that it is a short or medium range ground surveillance radar has also been made. (This item was last discussed in ATIR supplement No 97 - July 70). The NRS-1 system is believed to exist, but has not been identified up to now. It is thought that it consists of three radar intercept and direction finding equipments and a computing centre, mounted in four light vehicles, either GAZ(UAZ)69, or possibly UAZ469s. In both the intercept posts and the computing centre, the equipment can be broken down into individual modules, which are man-portable.

Identity

There now appear to be strong reasons for identifying POLE DISH as the intercept and DF post in the NRS-1 system. If this is so, it accounts for both POLE DISH's previous artillery associations and for its recent association with Motor Rifle Division Recce Battalions.

POLE DISH Equals NRS-1? (cont'd)

Organization

NRS-1 is believed to be held as follows:-

- a. **Motor Rifle and Tank Division Recce Battalions.** One system of three posts in the radio and radar (radio-technical) DF and intercept company.
- b. **Army Radar Intercept Battalion.** One system of three posts in each of the three companies.
- c. **Army Artillery Observation Regiment.** Two systems (six posts) in the radar battery of the reconnaissance battalion.
- d. **Army Artillery Brigade.** One system of three posts in the radar battery of the artillery observation battalion.

In a Combined Arms Army of four divisions, this amounts to a total of ten systems or thirty posts. In a Tank Army of four divisions, due to its lack of a Radar Intercept Battalion and an Artillery Brigade, the totals amount to six systems or eighteen posts. If an Army Artillery Brigade is held, the Tank Army's figures should be increased to seven and twenty-one.



Fig 2. POLE DISH Deployed

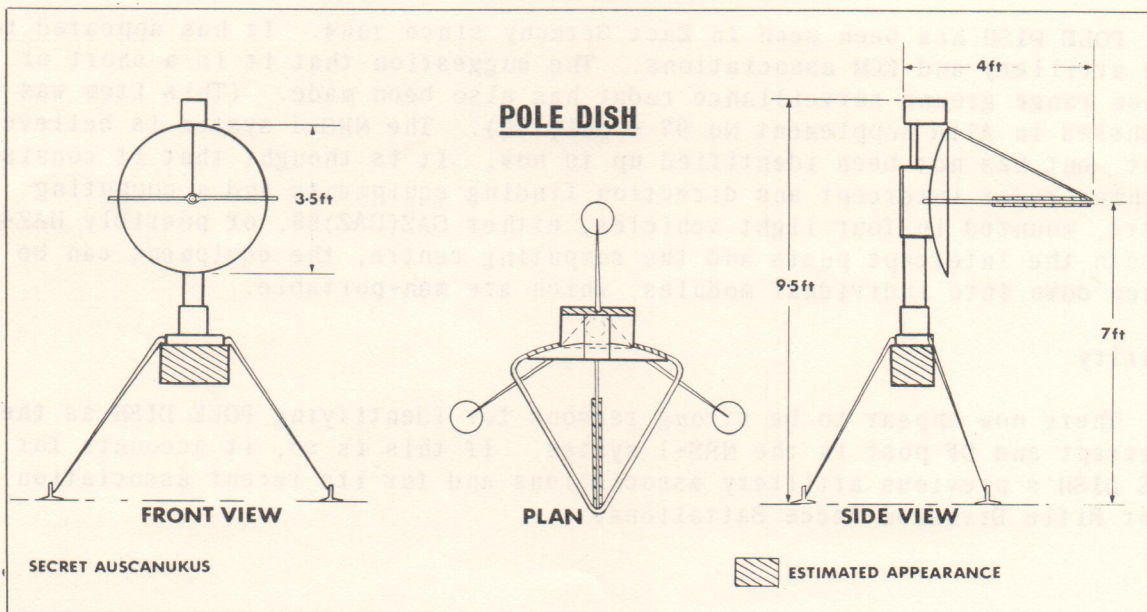


Fig 3. POLE DISH Antenna and Tripod (Artists Impression)

SECRET
AUSCANUKUS

POLE DISH Equals NRS-1? (cont'd)

POLE DISH consists of a pole mounted paraboloid, normally seen erected on a tripod, although it can be mounted on the GAZ-69 vehicle. When tripod mounted, a cable normally connects the antenna to the vehicle. The vehicle is believed to carry an R108M radio, which can be man-packed, and the signal analysing equipment. The latter may be a box, 50 cm high by 60 cm long which is sometimes seen dismounted from the vehicle, in close proximity to the tripod and connected to it by cable. An artillery director or theodolite is sometimes seen in the vicinity.

Deployment

The NRS-1 system is believed to be deployed on a base line approximately 7 kms long, about 4-6 kms behind the FEBA. When this is the case, the zone which one system could cover effectively, would be about 16 kms wide and 20 kms deep. If, however, bearings from more than one system were taken, location could be made to a maximum depth of about 40-60 kms, depending on the target radar and the terrain.

Performance and Coverage

The technical characteristics of each NRS-1 intercept receiver are believed to be as follows:-

- | | |
|------------------------------------|---|
| a. Maximum intercept and DF range: | 60 kms |
| b. Frequency Coverage: | 2500-3,700 MHz) Pulsed
and 8000-16,500 MHz) mode only |
| c. Accuracy: | 2-3 mils |
| d. Resolution: | 35 mils |
| e. Time into and out of action: | 15 - 20 mins |

The system reaction time, that is the time from the moment of the first intercept to the production of coordinates, is estimated to be 15-20 minutes.

Summary

The presence of the NRS-1 system in Divisional Recce Battalions and those of the Army Artillery Observation Regiment, if deployed forward, provide the Soviets with the capability of locating hostile air defence, ground surveillance and possibly weapon locating radars to a depth of about 20 kms, across the divisional front. The accuracy of this location would be sufficient for the purposes of artillery fire, and the Soviets possess artillery with sufficient range and in sufficient quantities to cover the zone.

The NRS-1 systems held by the Army Radar Intercept Battalion and the Army Artillery Brigade, in Combined Arms Armies, can also be deployed forward. Then, by taking bearings from widely separated posts, possibly from different systems in different units, the Soviets have the capability of locating air defence radars to a depth of 40-60 kms. Even if these systems are not deployed forward,

SECRET
AUSCANUKUS

POLE DISH Equals NRS-1? (cont'd)

the Soviets still have some long range location capability although to a more limited extent. The accuracy of location would be sufficient for combat intelligence purposes.

The NRS-1 system is mobile, can be made man-portable and individual posts can be brought into action in 15-20 minutes. Since it is mounted in soft-skinned vehicles however, the system is vulnerable to artillery fire. For the best results, individual posts will need to be deployed and surveyed in with some care. Thus, although a post can be brought into action reasonably quickly, the time taken to deploy a system of three posts will be very much longer.

The reason for this article is the recent acquisition of information indicating that POLE DISH forms part of the NRS-1 system. It should be noted, however, that none of the details or capabilities of the NRS-1 system are dependent on this identification.